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U.S. GOVERNMENT PRINTING OFFICE : 1965 O—777-887

1973 ANNUAL REPORT

PRIEST RIVER EXPERIMENTAL FOREST

By
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Distribution
Ogden
Klawitter
Foiles
NFFL
Panhandle National Forests S.O.
Priest Lake R.D.
RWU 1206
RWU 1601
RWU 2303
RWU-1451
RWU 2204
PREF

Intermountain Forest and Range Experiment Station
Ogden, Utah

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INTRODUCTION

An extreme summer drought resulting in forest closures, initiation of a Youth Conservation Corps camp, increased activity as a coordinating site for the Coniferous Biome, and continued research activity by Research Work Units highlighted the 62nd consecutive year of operation at the Priest River Experimental Forest. The Experimental Forest again provided opportunities for the Experiment Station to continue effective working relations and cooperation with national forests and individual ranger districts; State agencies; universities, both locally and nationally; public school systems; local communities; and interested public.

RESEARCH ACTIVITIES

Timber Management Research

Reproduction surveys were completed by YCC camp enrollees in two sale areas; Upper Benton Creek Sale, Units A & C. - 150 acres, and Lower Benton Creek Sale, Units A & B - 110 acres. Re. Activity Map.

Steel plot marker posts were installed to replace deteriorated wooden posts in plots 101 thru 114.

A fertilization test was established in 1973 in an 18-year old natural stand. The stand occupies about 3 acres within a lower switchback of the South Ridge road, adjacent to the 1956 vigor-quality planting of semi-rust resistant western white pine. This stand was previously thinned (1971) to an average spacing of about 13' x 13', aiming as much as possible toward a mixed species composition. Forestry-grade urea prills were applied by hand at the rate of 200 pounds of N per acre to three plots, each of which was paired with an unfertilized check plot.

Major study objectives are to determine the fertilization effects on height and diameter growth of the several coniferous species present and on the cubic volume production per acre. Secondary objectives are to note any important effects on the development of non-tree vegetation, phenological events, or disease and insect incidence.

Coniferous Biome Coordinating Site Program

In pursuance of the role of the Experimental Forest as a coordinating site, we received considerable assistance from the Coniferous Biome through a Biome grant to the University of Idaho. This permitted the University's employment of Dave Gruenhagen to work on jobs of mutual benefit. During the past year, he (1) revised and updated a bibliography of reports related to Experimental Forest Research since 1911; (2) prepared a map showing locations of past and present study plots, timber harvests, and cultural operations; (3) assembled and abstracted information on Experimental Forest data collections of all kinds to the extent they are still available for reference; (4) obtained computer printouts of weather data summaries for the control station; and (5) assisted in the installation of two environmental monitoring stations in Benton Creek.

The environmental monitoring stations are tied in with the environmental grid program of the Coniferous Biome. Their purpose is to determine the moisture, nutrients, and light, enabling comparisons of environments of different ecological systems. Two of the stations were established on the Experimental Forest in the latter part of June, 1973. One was

located in Douglas-fir/ninebark habitat type on a southwest slope above Benton Creek near the junction of Roads A and B. The other was located in western hemlock/pachistima habitat type in a protected southwest-running subdrainage about 1/2 mile up Road C from Road A.

The following data is being taken at about 10-day intervals at each site:

Soil temperature at 20 cm.
Air temperature at 1.5 m.
Relative humidity " " "
Plant moisture stress
Needle samples for N determinations

In addition, other measurements of growth phenology, litter accumulation and decomposition rates, and stand growth are being made.

Genetics

Work accomplishments by RWU #1451 consisted of up-grading and modification of the sprinkling system at the nursery site. Periodic cultivation; perimeter fence repair, and rodent control, were required to maintain the two five-year studies initiated in 1971. Unit members included G. Rehfeldt, D. Andrews, D. Coffin, M. Morton, K. Wise, R. Steinhoff, P. Wells. and G. McDonald.

Forest Insect Research

Regular inspections and observations were made by Bob Denton in the larch casebearer research site, where eighteen larch trees are being treated with malathion for eradication and control of casebearer insect.

Watershed Management Research

Upper Benton Creek was temporarily deactivated pending outcome of evaluations from data collections of the past years of active research. Four "H" flumes, including approaches for same, were constructed at the P.R.E.F. headquarters station shop, and were transported for installation, at the Horse Creek Watershed Study site.

Forty soil moisture access tubes were installed throughout three sub-drainages of the Benton Creek Watershed, by personnel of the U. of I. in cooperation with the W.M.R. project. The objective of the newly initiated study is to measure soil moisture and transpiration loss.

FOREST INFLUENCES

Control Weather Station

Table #1 describes weather data which are closely comparable to the "normal" figures of the past 62 years, during which continuous and unbroken records have been maintained. Weather information is provided in weekly and monthly reports to the local news media, as well as government agencies, state agencies, public schools, private industry, and private individuals.

Figure #1 depicts cumulative precipitation for the 1972-1973 water year, together with the comparative trends for the wettest year, driest year, and the 50 year mean.

Table #2 reveals other long-term records of precipitation, which have been maintained within the Benton Creek Watershed. Daily observations recorded at the Fire Weather Station revealed .11 (eleven hundredths) of an inch of precipitation during a 74-day period, between mid June and August 30th, 1973. The buildup index reached a high of 402 on the latter date. Due to the severity of the extreme fire danger, the National Forest was closed August 5, thru August 31. Abnormal gusty winds, high temperatures during the night, with low humidity readings, were the main factors creating the drought conditions. The hot, dry weater resulted in a noticable outbreak of aphid activity throughout the forest. Swarms of wasps and hornets caused much concern and discomfort for the standby fire crews and overhead personnel who were camped at P.R.E.F. during this time. See story page (Under Standby Fire Camp).

Fire Weather Station

Procedure was changed in respect to the daily report, which was traditionally done by phone or radio during the regular fire danger period. It was decided the daily data was no longer needed in the network of reporting stations. The ten-day reports were continued and these were mailed to the fire dispatcher at the Supervisor's office in Sandpoint, Idaho. Observations in compliance with the National Fire Danger Rating System are made daily from May 1st through October 31.

Table 1. CONTROL STN. MONTHLY PRECIPITATION AND TEMPERATURE - 1972
FIGURES IN PARENTHESES ARE 50-YEAR (1912-1961) AVERAGES.

	PRECIPITATION		TEMPERATURE			
			Ave. Max.		Ave. Min.	
	Inches		- - - - - -Degrees F- - - - - - - -			
January	4.09	(4.02)	28.2	(30.3)	17.3	(16.6)
February	1.09	(3.09)	39.0	(36.4)	22.3	(18.3)
March	1.71	(2.65)	46.8	(45.3)	27.3	(23.5)
April	0.81	(2.04)	57.0	(57.6)	29.3	(29.6)
May	2.30	(2.18)	69.0	(66.7)	38.3	(36.6)
June	0.61	(2.27)	73.4	(73.5)	44.8	(42.5)
July	T	(0.89)	86.2	(83.1)	46.0	(45.5)
August	0.47	(0.97)	83.9	(82.0)	45.8	(43.4)
September	2.61	(1.67)	71.5	(70.4)	42.5	(37.4)
October	2.51	(2.96)	53.6	(56.6)	36.5	(32.1)
November	10.46	(3.76)	35.1	(39.6)	27.6	(26.7)
December	7.77	(4.37)	32.0	(32.5)	26.9	(21.1)
Annual	34.43	(30.87)	56.3	(56.1)	33.7	(31.0)

Fig. 1--CUMULATIVE PRECIPITATION FOR WATER YEAR, OCTOBER THROUGH SEPTEMBER
PRIEST RIVER EXPERIMENTAL FOREST, CONTROL WEATHER STATION

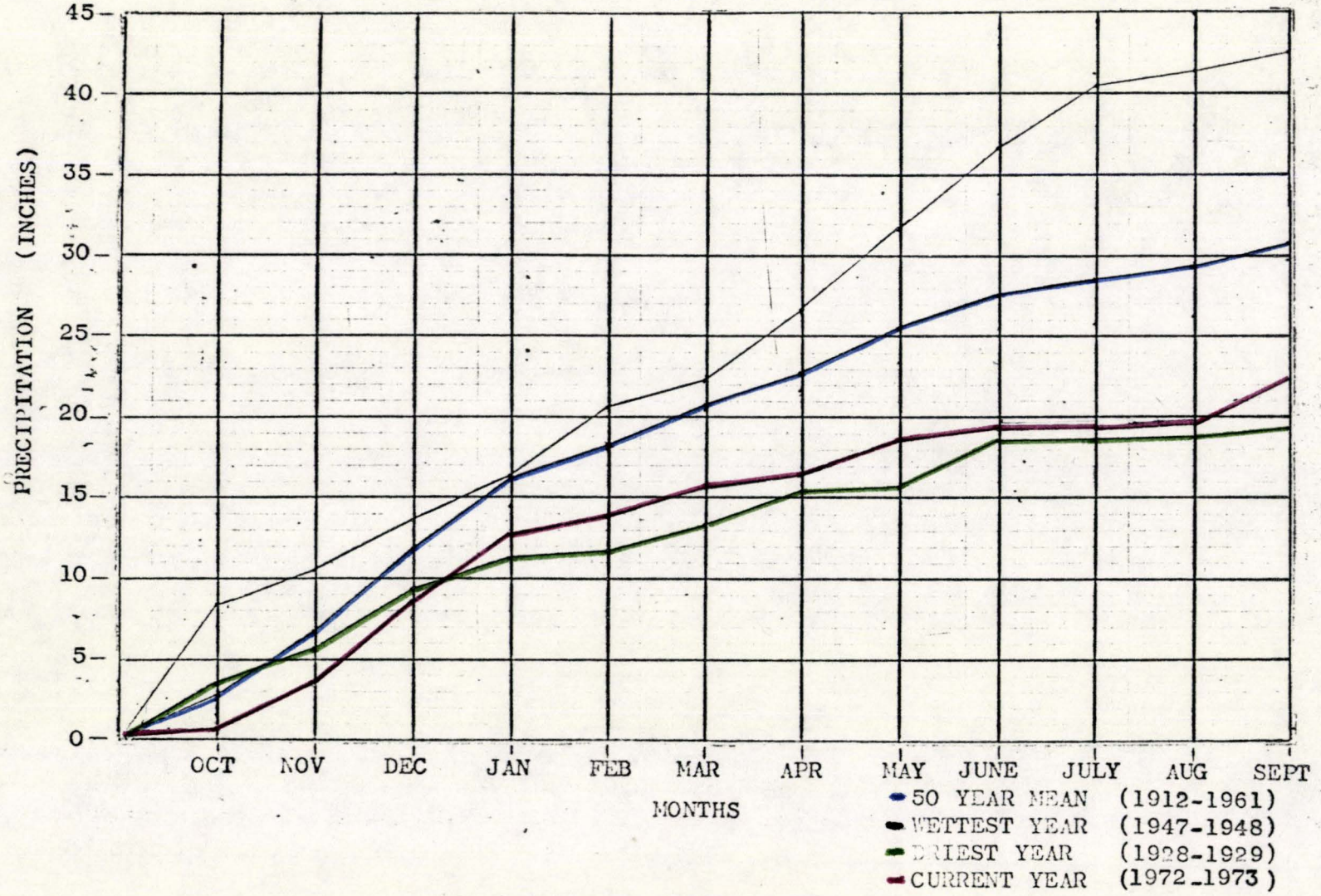


Table 2. PRECIPITATION AT 3 STATIONS ON BENTON CREEK
FIGURES IN PARENTHESES ARE 13-YEAR (1960-1972) AVERAGES

MONTH	CONTROL STN. ELEV. 2344		BENTON DAM ELEV. 2640		BENTON SPRING ELEV. 4700	
	- - - - - - - - - - -INCHES- - - - - - - - - - -					
January	4.09	(4.53)	3.90	(5.11)	5.10	(4.48)
February	1.09	(2.68)	1.12	(2.79)	1.40	(3.36)
March	1.71	(2.85)	2.04	(3.07)	2.40	(3.44)
April	0.81	(1.98)	0.96	(2.15)	1.30	(2.71)
May	2.30	(2.38)	2.26	(2.46)	3.30	(3.21)
June	0.61	(2.12)	0.49	(2.24)	1.30	(2.83)
July	T	(0.75)	T	(0.80)	0.01	(1.00)
August	0.47	(1.26)	0.83	(1.44)	0.80	(1.62)
September	2.61	(1.71)	3.15	(1.70)	3.50	(1.94)
October	2.51	(2.49)	2.66	(2.40)	2.90	(2.72)
November	10.46	(4.85)	10.53	(4.93)	11.20	(5.01)
December	7.77	(4.96)	6.47	(5.33)	8.20	(5.76)
Total	34.43	(32.56)	34.41	(34.42)	40.41	(38.08)

Snow Survey

Table #3 records snow measurements made starting January 1, 1973, and continuing until the end of the snow melt at higher elevations. The two snow courses, consisting of Benton Springs and Benton Meadow, are maintained in cooperation with the Soil Conservation Service, where monthly reports are submitted the first of each month.

Table 3. SNOW DEPTH AND WATER CONTENT FOR BENTON MEADOW AND BENTON SPRING SNOW COURSES, 1972. FIGURES IN PARENTHESES ARE 25 YR. AVE. - (1937-1961)

Month	Benton Meadow (Elev. 2344) Snow Depth		Benton Meadow (Elev. 2344) Water Content		Benton Spring (Elev. 4775) Snow Depth		Benton Spring (Elev. 4775) Water Content	
	Inches							
January -1-	00.0	(12.0)	00.0	(2.7)	23.9	(30.9)	5.8	(8.4)
February-1-	12.8	(19.4)	1.7	(4.8)	37.7	(46.8)	11.5	(13.7)
March -1-	10.2	(19.3)	2.7	(6.0)	37.5	(55.3)	12.6	(18.4)
April -1-	4.0	(6.2)	.1	(2.3)	39.0	22.1	13.9	(20.4)
May -1-	00.0	(0.0	0.0	(0.0)	21.4	34.0	9.4	(14.8)

ADMINISTRATIVE ACTIVITIES

Fire Protection

The fire plan was discussed and agreed satisfactory at the Annual Coop. meeting of the Forest, District, and INT Station.

Forest Roads

There was no scheduled road maintenance for the 1973 C.Y. The North Ridge Timber Sale contract called for reconstruction of portions of C Road and E Road which was completed. The sale area also included 3.46 miles of new road which was resurfaced in early fall.

Forest Management

Maintenance work accomplishments in the Weidman arboretum are as follows:

1. Supplementary sanitation work with 100% slash removal in the ponderosa and jeffrey pine plots. Re. Activity Map.

2. Pruning and dead wood removal, with 100% disposal in the red pine, Austrian pine, scotch pine, jack pine, and lodge pole pine plots. Re. Activity Map.

3. Over-wood removal in the bristlecone pine plots.

Timber Sales

North Ridge (Georgia Pacific Lumber Co.). Timber removal along the scheduled re-construction portion of C Road, plus supplementary stump removal was completed during the 1973 summer season. Work requirements yet to be accomplished include road blading, ditch cleaning, and some scarification.

Headquarters Maintenance

Favorable weather conditions contributed to an early completion of the annual spring clean-up. Grounds maintenance consisted of removing debris accumulation caused by winter storms, removal of blister rust infections, minor landscaping, weed control, dust control, headquarters road surfacing, tree pruning, and burning. Buildings which were closed down for the winter, were re-opened and the water and electrical systems checked for defect. The entire headquarters facility proved to be ample in providing accommodations for the YCC encampment, and as a base of operation for a large crew of stand-by fire fighters.

Buildings & Grounds

(A) The regular, preventive maintenance checks were made throughout all headquarters facilities. Additional office space in the administrative building was opened for use for YCC overhead.

(B) Bunkhouse - The kitchen, and dining area was thoroughly cleaned and painted. A new hot water heater and fuel tank were installed, and the upstair floors refinished. Improved bunks, mattresses and lockers were installed, for use by YCC.

(C) Cottage #1 (Lodge) The basement shower was replaced to accomodate YCC personnel. Additional fire extinguishers, and a fire escape system were provided. A new washing machine was installed in the basement.

(D) Cottage #2 - Double bunks, furniture, and a new electric range were installed to provide added comfort for the YCC camp director, and his family.

(E) Cottage #3 - A new electric range was installed, and modification of the kitchen sink vent system was necessary due to roof snow slippage.

(F) Cottage #4 - The roof was completely re-nailed and the exterior trim of house and garage was painted.

(G) Storage shelter (Old Ice House). A one-hundred foot span of underground electrical wiring, extending from the fuel storage area to the storage shelter was installed to provide lighting and power outlets for the standby fire crew camp area.

(H) The other existing buildings, which include a two-car garage, woodshed, fuel storage, and two storage shelters were inspected at regular intervals, and found to be in sound condition.

(I) The water system, nursery irrigation system, and the sewage disposal system, operated throughout the year, with no cost for maintenance.

(J) Supplementary posts were set along the fence which surrounds the dwarfmistletoe research site of the nursery.

(K) The "open-pit" method of garbage disposal at the P.R.E.F. Headquarters Station, became non-existant during the season of 1973. Members of the YCC crew back-filled and leveled the garbage pit southwest of the nursery.

Personnel

Position	Dates	Name
Superintendent	1/30/65 - Present	C. Carpenter
Forestry Tech. WMR	8/19/64 - Present	B. Jeffers
Forestry Aid	5/21/73-6/11/73 - 8/6/73-8/31/73	Eric Eldenberg
Maintenance Asst.	Intermittent	Jane Knoke
Civil Eng. Tech.	Int. (Winter & Spring)	Wayne Thompson[1/]
Forest Power Tool Operator	5/1/73 - 6/28/73	Steve Johnson[2/]

[1/] On loan from Falls Ranger District to assist RWU 1601.

[2/] On loan from Falls Ranger District, and Priest Lake Ranger District--following consolidation of the two ranger districts.

Meetings, Group Visits, and Inspections

Jan. 21	Preliminary inspection and tour of P.R.E.F. facilities in relation to YCC encampment plans. Attending were F. Olness and B. Welch.
Jan. 16	The annual coordinating meeting between Falls District, Kaniksu N.F. and the Intermountain Forest and Range Experiment Station was held in Spokane, Wash. In attendance were Lloyd Swanger, Wallace Huff, Tom Sayer, and Skip Newton of the Falls Dist., Marvin Foiles, Fred Olness, Ray Boyd, and Cal Carpenter of the Exp. Station. Maurice Vogel, Forest Service, Spokane Representative made local arrangements and attended the morning session.
Mar. 10	Preliminary inspection, and tour of P.R.E.F. facilities by Joseph Crowley, appointed YCC camp director.
Mar. 26	Planning Meeting in preparation for YCC encampment. Those attending were; Gary White, Ogden, Utah, Fred Olness, Moscow, Idaho, and Joseph Crowley, Curlew C.C.C. Wauconda, Wash.
Apr. 16	Visitation by the Forestry Department of the Spokane Community College.
Apr. 24	General planning meeting in preparation for YCC encampment. Fred Olness and Helen Perryman.
May 14	Marvin Foiles, Glenn Deitschman, and Ray Boyd, Field inspection, relative to establishment of Environmental Grid sites.
May 19	W.S.U. field ecology class, Dr. Daubenmire and (20 members).
June 4-5	Experimental Forest tour by Bill Emmingham, Environmental Grid Coordinator, M. Foiles, G. Deitschman, R. Boyd, and C. Carpenter for the purpose of locating suitable sites for environmental monitoring stations, and discussion of related techniques.
July 9	Wayne Ball, WO, Gary White, Ogden, Dave Lingwood, University of Michigan, Fred Olness, F.S.L., Moscow. General inspection of YCC encampment, with emphasis on current activities and to obtain statistics.

July 29	Dr. Borlaug, Director, Wheat Program, International Maize and Wheat Improvement Center, from Mexico, visited P.R.E.F. to inspect disease and insect problems of western forests. He was accompanied by C. Wellner, R. Bingham, R. Hoff, and G. McDonald. During the visitation, observations were made at the following sites. White pine vigor quality plot, Canyon Creek resistance outplantings, nursery, ponderosa pine provenance test, western red cedar thinning study, and larch casebearer on both European larch and western larch.
Aug. 2	Members of the Western Forest Genetic Association, visited P.R.E.F. research sites, including the nursery, ponderosa pine provenance study, and the arboretum. The visit to the latter, centered on the exotic conifer plantings.
Aug. 3	Warren Daves, Division Chief Operations, Regional Forester representative, Ralph Kizer, Supervisor I.P. N.F., Con Schallau, Associate Director, IFRES, and Fred Olness were present for graduation and YCC camp termination.
Aug. 15	Experimental Forest tour by Joan Hett, (Coordinating Sites Director, IBP Coniferous Biome) and G. Deitschman, for acquaintance with research programs and conditions at the coordinating site.
Aug. 30	A tour of active research projects, on the P.R.E.F. was made by M. Foiles and two forestry students. Matt Fields and Gary Duke, temporary assistants, employed by INT at the D.C.E.F. Headquarters Station.
Sept. 27-29	Silviculture Professors sub-group, Society of American Foresters. Twenty professors of silviculture at forestry schools in the U.S. and Canada attended a field trip to acquaint the professors with silviculture of the cedar-hemlock-grand fir climax forests of the Inland Empire. The group was housed at P.R.E.F. and visited both Priest River and Deception Creek Experimental Forests. The tour and discussions were led by C. Wellner, M. Foiles, and R. Boyd. The Univeristy of Idaho Forestry School sponsored the trip.

Research Cooperators

Dates	Individuals		Purpose
Apr.-Sept.	Richard Cline - W.S.U.		Soil moisture studies in cooperation with R.W.U. 1601.
Int. 1973	G. Snyder - U. of I.		Water quality studies in cooperation with R.W.U. 1601
Nov. 30, & Cont'd.	Jack King M. Anderson D. Hartwig	U. of I.	Install soil moisture access tubes in the Benton Watershed

Cooperation

The regular annual meeting with the Falls Ranger District was held in Spokane, Wash., on January 16, 1973. Discussion of plans for the initial YCC camp at P.R.E.F. was the main topic. Other pertinent subjects included Timber Sales, Regeneration and miscellaneous items.

On July 1, consolidation of the Falls Ranger District and the Priest Lake Ranger District was completed. The new enlarged district will be named the Priest Lake District, administered from Priest Lake. Cooperation concerning management of the Experimental Forest will continue as outlined in the current Memorandum of Understanding between the Panhandle National Forests and the INT Experiment Station.

Standby Fire Camp

During the month of August the Priest River Experimental Forest headquarters was the scene of perpetual activity. Within 24 hours after termination of the YCC encampment, the area was inhabited by approximately 100 stand-by fire fighters which were recruited by Priest Lake Ranger District.

Station facilities were utilized for recruiting, training, partial housing, and for meal provision. The camp was activated August 4, 1973. and deactivated September 1, 1973. During this period of time, the four, twenty-five man crews, were dispatched, on several project fires including the Freeman Lake Fire, Canfield Fire, Addie Fire, Couger Creek Fire, and the Tri Creek Fire.

The overhead consisted of Camp Boss, Asst. Camp Boss, Time Keeper, Cooks and helpers. Five buses were retained on 24 hour standby during the operation.

YCC

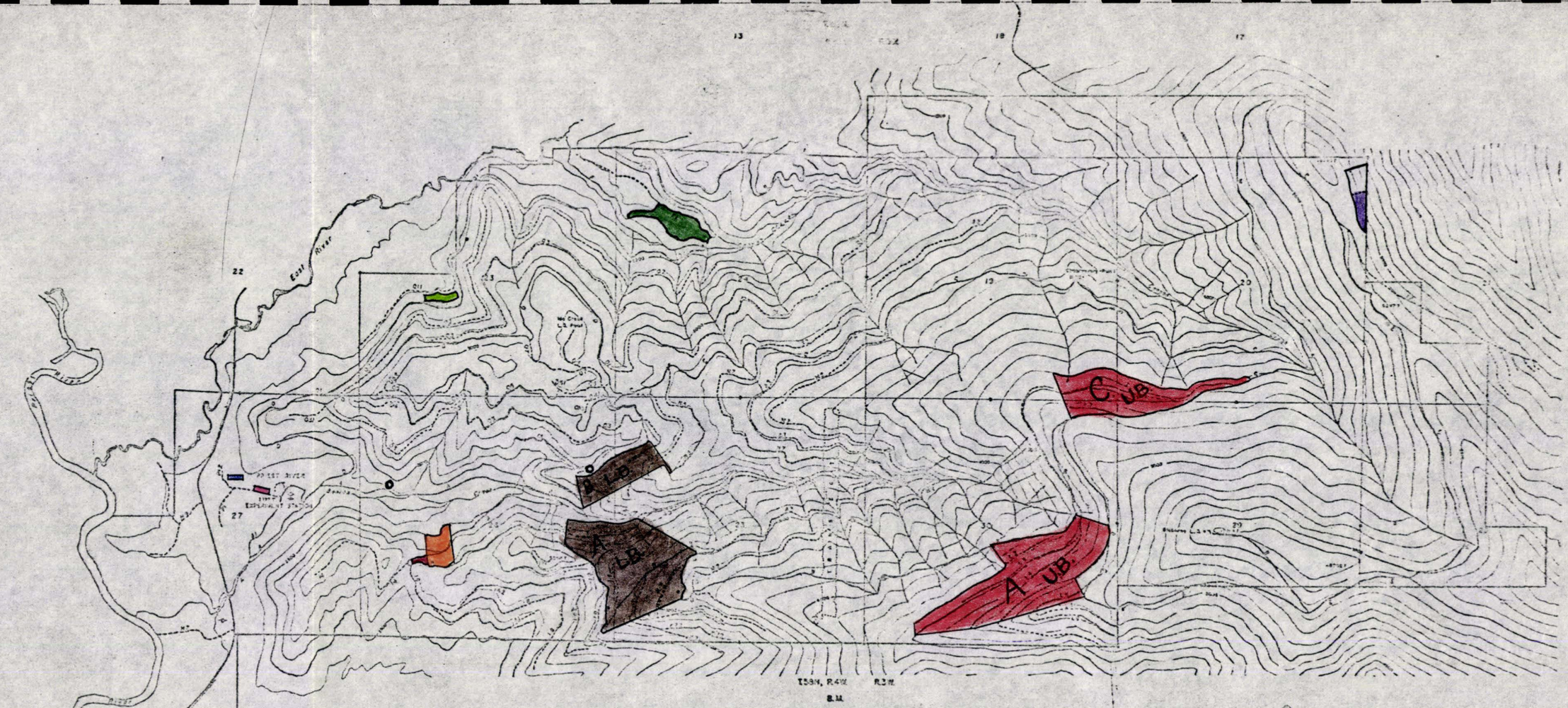
A new program operated by the Forest Service's Intermountain Forest and Range Experiment Station became a "first" in the history of the research unit. A Youth Conservation Corps Camp, sponsored by the U.S. Department of Agriculture was introduced as part of a pilot program to provide youth with practical work experience and environmental education. The Priest River Experimental Forest headquarters facilities were utilized five days per week for lodging for the camp director, crew leaders and crew members.

Twenty-four applicants were selected from ten North Idaho counties, and two North Eastern Washington counties. The coed camp consisting of 12 male, and 12 female members, participated in varied work programs during a seven week period, from June 18 to August 3, 1973.

Schedules were designed to offer a variety in work activity, class room studies, and recreation, for the four six-member crews.

Projects were completed for numerable Research Work Units, within the INT Station as well as National Forest, Ranger Districts, and the Idaho Fish and Game Dept.

An estimated 585 man days were expended, with an approximate valuation of $12,300.00.



Upper Benton-Unit A and Unit C, Reproduction Survey
Lower Benton-Unit A and Unit B, Reproduction Survey
V.Q. Plot-Natural Reproduction and Brush Removal
Ponderosa Racial Variation Plot-Pruned and Natural Reproduction Removal
Environmental Grid Sites--International Biological Program
Ida Creek Elevational Variation Plots-Plantation Maintenance
Arboretum-Continued Sanitation Removal, 100% Removal
Arboretum-Bristle Cone Plot-Natural Reproduction Removal
Canyon Creek-WWP Outplanting, Plantation Maintenance incl. survival count
Nursery-General Maintenance
North Ridge Sale-Unit #1, Sale Specification Adjustment (reserve natural regeneration)
South Ridge-Crow's Nest-Fertilization Project

PRIEST RIVER
EXPERIMENTAL FOREST

KANIKSU NATIONAL FOREST
IDAHO